Entrepreneurial Business and Economics Review

2019, Vol. 7, No. 3

10.15678/EBER.2019.070306

The Performance of High-Growers and Regional Entrepreneurial Ecosystems: A Research Framework

Marta Gancarczyk

ABSTRACT

Objective: The objective of this research is to elaborate a framework that explores the relationships between the performance of high-growth enterprises and the characteristics of regional entrepreneurial ecosystems (EEs).

Research Design & Methods: This conceptual article adopts a multidimensional and profiling approach to the characteristics of EEs. The methodology is based on the combined narrative and systematic literature reviews.

Findings: Five propositions as to the relationship between growth and performance of firms in the regional context, as well as to the impact of various regional profiles on the growth and profitability of firms were elaborated. The final outcome of this synthesis is a research framework.

Implications & Recommendations: The implication of the proposed framework includes the development of testable hypotheses for further empirical investigation. The recommendation is to adopt a profiling method of assessing the effect of EEs.

Contribution & Value Added: The research contributes by setting out a direction for empirical studies that would test the impact of EE profiles and result in their quantitative taxonomies. The value added consists in reflecting the heterogeneity of EEs and their output evaluation rather than input characteristics.

Article type: research article

Keywords: entrepreneurial ecosystem; region; firm growth

JEL codes: L25, L26, L38, L52, L53

Received: 10 May 2019 Revised: 29 June 2019 Accepted: 1 July 2019

Suggested citation:

Gancarczyk, M. (2019). The Performance of High-Growers and Regional Entrepreneurial Ecosystems: A Research Framework. *Entrepreneurial Business and Economics Review,* 7(3), 99-123. https://doi.org/10.15678/EBER.2019.070306

INTRODUCTION

There is rich evidence of the economic contribution of high-growth firms toemployment, value-added, and innovation (Birch, Haggerty, & Parsons, 1995; Coad, 2009; Stam *et al.*, 2006; Acs, Parsons, & Tracy, 2008; OECD, 2007; 2010; Wach, 2012). This input is one of the rationales for the on-going shift in industrial and entrepreneurship policies, from the focus on start-ups and general entrepreneurial activity to performance and productive entrepreneurship, i.e. quality ventures that turn to scale-ups, high-growers or unicorns (Baumol, 1996; Mason & Brown, 2014; Isenberg & Brown, 2014; Acs *et al.*, 2017; Stam, 2015; 2017).

Within the extensive research on high-growth enterprises, the importance of performance as profitability vs growth as size increase is rarely investigated (Davidsson, Steffen, & Fitzsimmons, 2009; Steffen, Davidsson, & Fitzsimmons, 2009; Zbierowski, 2012). Nevertheless, both theory and practice point to the difference between growth as size increase and performance as economic efficiency (Brown & Mawson, 2016; Brown, Mawson, & Mason, 2017; Achtenhagen, Naldi, & Melin, 2010; Bolek, 2018; Marris, 1964). Expansion is measured by revenue, employment, asset value or value-added dynamics, and performance denotes economic efficiency, measured by profitability dynamics (Brown *et al.*, 2017; Achtenhagen, Naldi, & Melin, 2010; Nicholls-Nixon, 2005; Marris, 1964). Moreover, growth is rather a means to increase economic efficiency than the ultimate objective of enterprises (Achtenhagen, Naldi, & Melin, 2010). Moreover, profitability is conducive both for survival and sustainable growth (Davidsson, Steffen, & Fitzsimmons, 2009; Mogos, Davis, & Baptista, 2015). Beside firm- and entrepreneur-specific characteristics, it is recognized that environmental conditions affect growth and performance of firms (Brown, Mawson, & Mason, 2017; Capozza, Salomone, & Somma, 2018; Wiklund, Patzelt, & Shepherd, 2009). However, the environmental factors are under-researched causes of firm expansion relative to capability factors (Brown & Mason, 2017; Welter, 2011; Zahra & Wright, 2011).

Recently, the role of contextual, environmental conditions has gained importance in the entrepreneurship research focused on venture creation and expansion (Chandler, McKelvie, & Davidsson, 2009; Wach, 2008; Lisowska, 2012; Welter, 2011; Zahra & Wright, 2011). This context is often presented as entrepreneurial ecosystems (EEs) that involve interrelations among industrial, social, and institutional conditions in specific territorial units (Mason & Brown, 2014; Isenberg, 2010). The idea of EEs emerged as a response to the shift in economic policy toward productive entrepreneurship and from its inception it has been centred around firm growth (Stam & Spigel, 2016; Mason & Brown, 2014; Stam, 2017; Acs *et al.*, 2017). The major research and policy problem of the EE literature is how EEs can enhance the growth and performance of firms.

Considering the interrelated fields of firm growth and EEs, research on the impact of EEs on firms' expansion is scarce (Acs *et al.*, 2017; e.g., Auerswald & Dani, 2017; Thomas, Sharapov, & Autio, 2018). Particularly, there is a gap in investigating EEs' impact on profitable and thus sustainable growth. Consequently, the objective of this article is to develop a research framework that explores the relationships between the performance of high-growth enterprises and the characteristics of regional entrepreneurial ecosystems.

The article is conceptual in nature and adopts the method of combined narrative and systematic literature reviews, as justified by the underexplored research on the growth-

profitability nexus and by the initial stage of EE studies. Moreover, integrating these two streams into one research problem is also in the inception phase of investigation.

Our article addresses research gaps, i) in the area of the role of entrepreneurial ecosystems in the performance of high-growers, ii) in the area of interdependencies between growth and performance of enterprises. Consequently, this study intends to provide three contributions. First, it advances the literature on entrepreneurial ecosystems, by proposing how different profiles of EEs contribute to firms' growth and performance. Second, it adds to the studies on entrepreneurial growth, by proposing how the performance of high-growers is conditioned by the context. Third, it enables knowledge accumulation by proposing the research framework that integrates firm growth and EE studies.

After the introduction, in the Material and Methods section, we present a methodological background of the study. The Literature Review and Theory Development section proposes a research framework for studying the impact of EE characteristics on the performance of high-growers. The Discussion section synthesizes the research in relation to extant literature, as well as explains its contribution. Conclusions, limitations, and implications for further investigations, entrepreneurial practice, and policy follow in the last section.

MATERIAL AND METHODS

The article combines two interrelated research streams, namely, (1) studies on firm growth and (2) studies on the entrepreneurial ecosystems, thus seeking knowledge accumulation and advancements in the both streams. This approach is justified by the interrelated research gaps that are present in those streams, and that can be resolved by the formulation of the integrative problem. We adopt a conceptual approach, with the use of narrative literature review as a major method and systematic literature review as a complementary method. Both methods are subordinated to the expected outcome of developing a research framework.

Therefore, the research procedure involved two major phases.

(i) Narrative literature review.

Narrative literature review is justified by the breadth and early development stages of the fields under study (Collins & Fauser, 2005). The two research fields of growth-profitability nexus and EEs are initial and underexplored, while their combination makes the search broad. As an outcome, narrative reviews are expected to identify specific research questions or propositions (Green, Johnson, & Adams, 2006). Relative to systematic literature review, this type of research involves a subjective component. However, the selection procedure and choices need to be explained (Green, Johnson, & Adams, 2006).

The search was performed predominantly in the databases of Web of Science, Scopus, and Proquest, as well as monographs filtered through Google Books. We screened primarily peer reviewed leading journals on entrepreneurship and regional development, indexed in Web of Science and/or Scopus. The focus was on the theoretical and empirical papers in the area of:

- firm growth, particularly the performance of high-growers and the role of regional environment in this regard,
- entrepreneurial ecosystems, particularly their essence and impact on the growth and performance of firms.

The final sample counted more than 70 academic peer-reviewed papers and monographs. The outcomes of the narrative literature review were as follows:

- the identification of the major gaps in the two interrelated fields of firm growth and EEs and the formulation of the major, integrated research problem,
- the acknowledgement of the drawbacks of extant methodological approaches to the quantitative evaluation of the EE impact,
- the choice of a profiling approach to synthesize the findings from the literature reviewed and to guide the final framework.

Extant conceptual approaches to EES have identified sets of actors and factors that combine to generate productive entrepreneurship. However, little is known about the governance mechanisms, i.e. how relationships among EE components are coordinated (Stam & Spigel, 2016; Brown & Mason, 2017; Stam, 2017; Colombo *et al.*, 2019; Audretsch & Link, 2019; Colombelli & Paolucci, 2019). This prevents reflecting the systemic nature of EEs (Brown & Mason, 2017). In order to address this deficiency, we adopted extant models of governance and innovation that put stress on causal relationships among systemic components (Acs *et al.*, 2017; Brown & Mason, 2017).

Moreover, extant methodologies focus on input characteristics of EEs, such as institutional density, venture capital activity or patents (GC, 2018; Stangler & Ben-Masterson, 2015). Although the attention to outputs is recommended, the evidence of EE outcomes in terms of the performance of growth firms and scale-ups remains limited (Acs *et al.*, 2017; Stam, 2017; Nicotra *et al.*, 2018). In response to this gap, we evaluate the effect of EEs on the growth and performance of regional enterprises.

Although the case-based empirical evidence on EEs is developing (e.g., Auerswald & Dani, 2017; Cunningham, Menter, & Wirsching, 2019; Thomas, Sharapov, & Autio, 2018), quantitative studies are still scarce and largely unsuccessful in confirming the impact of EEs on the performance of regions and firms (Bruns *et al.*, 2017; Acs *et al.*, 2017). The cause might be unique characteristics of each territory (Acs *et al.*, 2017; Mason & Brown, 2013; Martin & Sunley, 2003), while extant methodologies tested sets of factors expected to bring similar effects in heterogeneous locations. Following the recommendation by Acs *et al.* (2017) as well as Brown & Mason (2017), we adopted extant models of regional governance as canvas to identify various profiles of regional EEs (Markusen, 1996; Sturgeon, 2003; Guerrieri & Pietrobelli, 2004; Simsek, Heavey, & Fox, 2017; Law *et al.*, 1998). The models were revisited and evaluated based on the advancements in the regional development literature. To synthesize these advancements, the systematic literature review was performed in the next step of the research.

(ii) Systematic literature review in the area of the impact of regional environment on firms' growth and profitability.

The systematic review was to explore a more strictly defined topic that emerged as a result of the narrative literature review (Green, Johnson, & Adams, 2006). The review was focused on the impact of regional environment on firms' growth and profitability.

The investigation was performed in the Scopus and Web of Science databases. The search phrase combined the key words of "firm*/compan*y growth" or "high grow*th" and region* or "region* al environment," to be found in titles, abstracts, or key words. The Scopus database produced more than 2500 and Web of Science more than 600 results in the

first phase. However, after limiting the investigation to the fields of economics, business, social science and economic geography, Scopus revealed 276 results. The focus was on the English language articles published starting from 2000, to reflect the knowledge development after the considered models of regional innovation and governance were published (Markusen, 1996; Sturgeon, 2003; Guerrieri & Pietrobelli, 2004). Another criterion was the journal's interest and competence in the field, confirmed by at least four publications within the topics under research for Scopus and two publications for Web of Science, due to the latter being more selective. The next step included screening the abstracts according to the paper's relevance for the research, which resulted in 43 articles combined from both databases. The limited number of relevant papers reflects an underexplored nature of the area under study. Considering this nature, we followed the recommendation by Hoon (2013) to perform an additional manual search. The investigation was exercised in the area of industrial district and regional cluster literature to expand the evidence by 32 papers. The literature in this area is considered particularly relevant for understanding the development of productive entrepreneurship in the region (Isenberg, 2010; Brown & Mason, 2017).

When reviewing the final sample of papers, we particularly focused on the characteristics of regional environments that had an effect on the growth and performance of firms. These characteristics were grouped according to the structural elements derived from the regional governance and innovation models (Markusen, 1996; Sturgeon, 2003; Guerrieri & Pietrobelli, 2004).

LITERATURE REVIEW AND THEORY DEVELOPMENT

The Growth-Performance Relationship in the Regional Context

There is an increasing recognition that the economic importance of entrepreneurial activity depends on quality enterprises or productive entrepreneurship (Baumol, 1996; Birch *et al.*, 1995; Coad, 2009; Stam *et al.*, 2006; Acs *et al.*, 2008; OECD, 2007, 2010). These are high growth-oriented firms that innovate based on the investment in R&D, and expand into new products, processes, and markets applying technological advancements (OECD, 2010). The contribution of high-growers to employment, value-added and innovation is disproportionally large relative to their small representation in the population of enterprises (Birch *et al.*, 1995; Coad, 2009; Stam *et al.*, 2006; Acs *et al.*, 2008). The remaining, predominant population expands only incrementally or does not grow at all, maintaining a stable base for the economy, however, with a limited contribution to its dynamics (Coad, 2009). The firm's high-growth is predominantly defined as considerable size increase within a short time, which is associated with qualitative upgrading of capabilities (Penrose, 1959; Moreno & Casillas, 2007). It is often assumed that rapid expansion features at least doubling the initial size, as measured by sales, employment, asset value or value-added, within 3-5 years (Moreno & Casillas, 2007; Birch *et al.*, 1995; Smallbone *et al.*, 1995; Acs, Parsons, & Tracy, 2008; OECD, 2007; 2010). The investigation of performance is the more compelling that high growth involves risk and even uncertainty, due to considerable investment in technological innovations and new markets (OECD, 2010). Such an intensive investment is challenged by uncertainty, as well as low levels of liquidity and solvency, which raises concerns regarding the growth-performance relationship (Oliveira & Fortunato, 2006).

The extant studies on firm growth determinants are largely inconclusive as to the consistent set of growth and profitability determinants (Shepherd & Wiklund, 2009). These studies are predominantly focused on the resource-based factors, such as entrepreneurs' and firms' characteristics, with limited attention to the impact of environmental context (Chandler, McKelvie, & Davidsson, 2009; Brown & Mason, 2017). However, the environmental influences are increasingly recognized as considerable explanatory factors of entrepreneurial choices (Brown & Mason, 2017; Welter, 2011; Welter, Baker, & Wirsching, 2019; Zahra & Wright, 2011; Lipińska, 2018). They are also promising in resolving the ambiguity of findings as to expansion determinants (Chandler, McKelvie, & Davidsson, 2009; Brown & Mason, 2017).

The few studies that explore the relationships between growth and profitability focus on such characteristics of firms pursuing growth as age and earlier growth and profitability (Wiklund, 1999; Garnsey *et al.*, 2006; Steffens *et al.*, 2009; Glancey, 1998; Bolek, 2018). Earlier growth affects future prospects of growth and profitability (Wiklund, 1999; Garnsey *et al.*, 2006; Steffens *et al.*, 2009; Botazzi & Secchi, 2006; Coad, 2009). Growth is cumulative and self-reinforcing, i.e., prior expansion produces growth and efficiency due to dynamic increasing returns to growth (economies of scale, scope, network, and experience) (Botazzi & Secchi, 2006; Coad, 2009). However, it was also found that profitable low-growers are more likely to accomplish both future high growth and high profitability (Garnsey *et al.*, 2006; Davidsson, Steffen, & Fitzsimmons, 2009). Compared to high-growth but low-profitability firms, profitable low-growers are also less exposed to the threat of future low growth and low performance (Davidsson, Steffen, & Fitzsimmons, 2009). Other studies indicate a trade-off between growth and profitability due to time compression diseconomies, when the faster the expansion, the higher the expansion cost, and due to several management problems (Davidsson *et al.*, 2008; Dierickx & Cool, 1989; Steffens *et al.*, 2009; Markman & Gartner, 2002; Hambrick & Crozier, 1985; Nicholls-Nixon, 2005). The above research evidences the relationship between growth and profitability dynamics, however, it remains inconclusive whether the nature of this relationship as positive or negative, and regarding what moderates this relationship.

The unexplained variance in growth and venture creation determinants attracted the attention to the role of differing entrepreneurial contexts, including regional environments (Brown *et al.*, 2014; Capozza *et al.*, 2018; Chandler *et al.*, 2009; Welter, 2011; Zahra & Wright, 2011). This view resonates with the earlier growth-of-the-fitter assumption stating that expansion is accomplished by those who best adapt to and most efficiently exploit the environment (Nelson & Winter, 1982; Alchian, 1950; Downie, 1958; Aldrich, 1999, Dosi & Grazzi, 2006; David, 2006). The importance of environmental niches is emphasized, where necessary resources can be exploited (Hannan & Freeman, 1977; Hannan, 2005; Geroski, 2001).

Consequently, firms featuring the same regional context might experience similar growth and profitability patterns (Brown *et al.*, 2014; Capozza *et al.*, 2018; Dosi & Grazzi, 2006; Chandler, McKelvie, & Davidsson, 2009; Coad, 2009; Lumpkin & Dess, 1996). The extant findings prove the importance of favourable context conditions (resource munificence, financial and institutional support) for firm growth and profitability (Bruns *et al.*, 2017; Barbosa & Eiriz, 2011). Environments differ in resource munificence and can support growth and profitability by the access to financing (Wiklund, 1999; Wiklund & Shepherd, 2003;

Chandler *et al.*, 2009; Gagliardi, 2009; Colombo & Grilli, 2005) and institutional support (Janssen, 2009; Baughn *et al.*, 2010; Corrente *et al.*, 2019). Moreover, territorial units feature different levels of GDP, market, and innovation dynamics that affects firms' growth and performance (Wiklund & Shepherd, 2003; Coad, 2009; Kangasharju, 2000; Lumpkin & Dess, 1996; Corrente *et al.* 2019). Based on the evidence that various regional environments differently affect the growth and performance of firms, we formulate the first proposition.

Proposition 1: The relationship between growth and profitability of enterprises is moderated by the regional context.

The Characteristics of Regional EEs and the Performance of High-Growers

The EE concept recognizes the importance of territorial environments for productive entrepreneurship that is best reflected in high-growers and scale-ups or unicorns (Mason & Brown, 2014; Brown & Mason, 2017; Stam, 2017; Spigel, 2016; Dominiak, Wasilczuk, & Starnawska, 2016). The EE concept focuses on the performance of firms and territorial units, especially local and regional settings, however, countries and world regions are also considered (Bruns *et al.*, 2017). It emerged as a policy measure to support quality start-ups and firm growth rather than entrepreneurship at large. As such, EEs are one of the markers of the new industrial policy that acknowledges an uneven contribution of entrepreneurial activity and focuses on the enterprises that provide the largest and most sustainable outcomes in terms of employment and value added (Brown & Mason, 2017).
Entrepreneurial ecosystems are presented as sets of interrelated actors and factors that generate productive entrepreneurship in specific territorial units (Stam, 2017; Stam & Spigel, 2016). Although broad, this definition captures the core of EEs as focused on the performance of firms and regions within spatial, geographical boundaries (Mason & Brown, 2014; Brown and Mason, 2017; Acs *et al.*, 2017). Other definitions are more focused on the components of EEs, emphasizing types of actors, factors and dimensions that constitute this phenomenon (Mason & Brown, 2014; Brown and Mason, 2017; Spigel, 2017; Nicotra *et al.*, 2018). The composition of actors and factors is unique to the location considered, however, the frameworks of EEs propose some most relevant and universal components (Brown & Mason, 2017). The actors may include ambitious entrepreneurs (high-growth, innovative or productive entrepreneurs), innovative, highly qualified employees, as well as different levels of government (Mason & Brown, 2014; Stam, 2017; Stam & Spigel, 2016). The major dimensions have been structured into framework conditions, macro-economic conditions and region-specific conditions, suggesting the breadth of the phenomenon under study (Stam, 2017; Stam & Spigel, 2016). The analysis needs to cover both business-level factors, region-specific, socio-cultural factors, including human and social capital factors, and institutional arrangements among local, regional, and central governments (Brown & Mason, 2017; Acs *et al.*, 2017). Moreover, the links with external, international environment need to be considered as the expansion of high-growers and unicorns cannot be encapsulated within one territorial unit (Acs *et al.*, 2017).

Particular locations or regions demonstrate unique elements and governance mechanisms, therefore, "one size fits all" solutions do not apply for the purpose of research and policy (Mason & Brown, 2014; Brown & Mason, 2017; Capozza *et al.*, 2018). It is instrumental to identify some alternative models or frameworks that reflect the variety of territorial EEs, instead of promoting one universal model for all locations (Baker &

Powell, 2019; Hermann, 2019). The alternative models might serve as canvas to understand the nature and implications of a particular EE and to address it with tailored policy measures (Colombelli & Paolucci, 2019).

The EE concept builds on and subsumes the earlier concepts of regional environment (Stam, 2017; Mason & Brown, 2014; Isenberg, 2010). The theorists of EEs emphasize strong linkages between this concept and the earlier conceptualisations of the entrepreneurial context, such as clusters, industrial districts, and regional innovation systems (Stam, 2017; Mason & Brown, 2014; Isenberg, 2010). The EE concept adds to these accomplishments and differentiates from them by focusing on the entrepreneur as the outcome and major driver of the EE governance and dynamics (Acs *et al.*, 2017; Fernández-Serrano, Martínez-Román, & Romero, 2018; Isenberg, 2010).

Brown and Mason (2017) synthesize and delimit the concept of EEs taking the spatial agglomeration phenomenon and industrial district literature as a starting point. The extant models of regional innovation networks point not only to actors and factors, but also to their causal logics (Markusen, 1996; Guerrieri & Pietrobelli, 2004; Sturgeon, 2002). Markusen (1996) followed by Guerrieri and Pietrobelli (2004), as well as Sturgeon (2003) adopt an industrial district and governance perspective on the regional environment. However, the industrial perspective is not limited to one industry only, but it is rather a nexus of related industries resembling a regional specialised diversification or smart specialisation (Markusen, 1996; Foray, 2013; 2014; 2017). Industrial districts represent "sticky places" that make it difficult for smaller firms to leave, encouraging them to stay and expand, and attracting newcomers into the region (Markusen, 1996). They can be perceived as regional ecosystems comprising actors, with the leading role of firms interacting with human resources, local and central government, and resources, such as knowledge and technical support, as well as financing.

We derive the EE profiles from Markusen's typology (1996), combined with later insights from Guerrieri and Pietrobelli (2004) and Sturgeon (2002) that put stress on the role of industry technological advancement and on the importance of EEs' insertion into global value chains (Sturgeon, 2002). Following these insights, EEs can be categorised into four types,[1] namely SME-dominated ecosystems, large and small firms' ecosystems, external investment-based ecosystems, and government-backed ecosystems (Markusen, 1996; Guerrieri & Pietrobelli; Sturgeon, 2002). Each of these frameworks differentiates by structural features in the area of dominant firms (size, location of ownership and investment decisions), types of relationships (the strength duration of contracts) and collaboration culture, level of qualifications and mobility of personnel among firms, type of competitive strategy, stabilising mechanisms of sharing risk and innovation, as well as the role of local and central government. The breadth of actors and factors largely covers the dimensions of EE concepts (Mason & Brown, 2014; Brown & Mason, 2017; Spigel, 2017; Stam, 2017). Each type differs in implications for firms' performance and growth, as well as the sustainability of enterprises and the entire regional ecosystem. They are networked governance systems centred around and driven by the type of firms, particularly their size and ownership.

An SME-dominated regional EE is based on the population of small and medium-sized enterprises (SMEs) with local owners and thus investment decisions determined locally

[1] The original types of regional environments in Markusen's (1996) work were called "Marshallian," "Italianate," "hub and spokes," "satellite," and "state-anchored" districts.

(Pahnke & Welter, 2019). The strong and long-term cooperation among SMEs as well as the culture of mutuality and trust, generate stabilising mechanisms of sharing risk and innovation within joint projects (Litzel, 2017; Schröder, 2013; Malizia & Motoyama, 2019). SME networks generate positive scale and scope economies, and knowledge externalities (Grillitsch & Nilsson, 2019; Saxenian, 2000). The sources of financing and technical advice are accessible as business support institutions, e.g. business incubators, technology parks, seed funds, venture capitalist (Cumming, Werth, & Zhang, 2019;). High qualifications of human resources and their mobility among firms enable knowledge spillovers and creativity (Bhawe & Zahra, 2019; Hodges & Link, 2019; Lehmann, Schenkenhofer, & Wirsching, 2019). Consequently, the basis for competitive advantage are differentiation and product innovations rather than scale economies (Hodges & Link, 2019; Schröder, 2013). The role of local and regional governments is more important than the role of central government. This type of regional governance is considered as providing good prospects for stable and profitable growth of firms and the entire territorial unit. It is based on strong local entrepreneurship, innovation, and investment decisions made by local owners (Markusen, 1996; Malizia &Motoyama, 2019). However, the SME-based ecosystem has limited access to international markets and technologies, due to insufficient capacity of SMEs to organise foreign expansion (Gancarczyk & Gancarczyk, 2018b; Felzenstein *et al.*, 2015; Francioni, Musso, & Vardiabasis, 2013; Guerrieri & Pietrobelli, 2004; Brown & Mawson, 2016). Moreover, the growth of small firms is random and featured by discontinuity relative to the growth of large firms. The latter expand in a more persistent and predictable way, thus stabilising the regional economy (Brown & Mason, 2017; Coad, 2009). Considering the lack of complementarity between small and large firms and a limited international reach of this ecosystem (Hermann, 2019), we formulate the following proposition.

Proposition 2.1: SME-dominated regional EEs are associated with moderate rates of enterprise growth and profitability relative to other types of EEs.

This type of EE can be more open to the international environment if the regional industrial base represents higher levels of technology advancement and R&D intensity, as well as technological and market newness (Sussan & Acs, 2017; Boix & Trullén, 2007; Agostino *et al.*, 2015; Aslesen & Harirchi, 2015; Massini, Perm-Ajchariyawong, & Lewin, 2010; Cusmano, Mancusi, & Morrison, 2011; Kuratko *et al.*, 2017). Moreover, regional knowledge transfer institutions, such as universities, can play a vital role in opening an EE to global value chains (Cunningham, Menter, & Wirsching, 2019; Ghio, Guerini, & Rossi-Lamastra, 2019; Meoli, Paleari, & Vismara, 2019; Miller & Acs, 2017; Duschl *et al.*, 2014; 2015; Głodek, 2018). Proposition 2.2. assumes moderating roles of technology advancement and knowledge transfer institutions in SME-dominated EEs.

Proposition 2.2: The growth and performance of enterprises in an SME-dominated EE is strengthened provided that the industrial focus of this EE is high-technology and supported by knowledge-transfer institutions.

The large and small firms' ecosystems are centred around large enterprises (LEs) with headquarters located in the region where the major investment decisions are determined. LEs as focal firms and hubs pursue strong and long-term cooperation links with local SMEs, acting as sources of financing and technology transfer to regional enterprises (Giunta, Nifo, & Scalera, 2012; Brown & Mason, 2017; Pahnke & Welter, 2019; Schröder, 2013). They are

also a source of spin-offs, spin-outs, and business group affiliations that may strengthen the growth and performance of local enterprises (Sornn-Friese & Sørensen, 2005; Klepper, 2006; Kalantaridis *et al.*, 2012; Bamiatzi, 2014). These large "block-buster" or scale-up entrepreneurs bring knowledge spillovers by launching corporate accelerator programmes, by mentoring, board membership, and advisory (Colombo *et al.*, 2019; Mason & Brown, 2014). They also act as serial entrepreneurs, angel investors, and venture capitalists (Colombo *et al.*, 2019; Malipiero, Munari, & Sobrero, 2005; Munari, Sobrero & Malipiero, 2011). Thus LEs substitute for external business support institutions and collaborative initiatives among small firms, typical of SME-dominated EEs (Koch & Strotmann, 2006). Moreover, LEs form strong relationships with the cross-regional and international environment, being global pipelines and gate-openers to foreign markets and sources of technology for local entrepreneurs (Brown & Mason, 2017; Schröder, 2013; Broome, Moore, & Alleyne, 2018; Gilbert, McDougall, & Audretsch, 2008). In this ecosystem, there is a larger fraction of human resources with lower qualifications to perform standardised manufacturing tasks. The preference for working conditions in LEs lowers the personnel mobility between SMEs and large enterprises (Markusen, 1996). The basis for competitive advantage are scale economies and process innovations as required by the strategies of LEs. Central government becomes a key partner to LEs, diminishing the role of regional government (Gereffi & Lee, 2016). The large and small firms' ecosystem ensures stability and efficiency for local entrepreneurship and the entire territorial unit. This premise is based on the strength of focal firms. These are embedded in the region but with international sourcing opportunities that might turn to so called "genetic" proximity to other growing business environments (Colombo *et al.*, 2019; Chaudry & Ikram, 2015; Rice *et al.*, 2012; Munari, Sobrero, & Malipiero, 2011). The collaboration culture of this EE is hierarchical due to subcontracting, dependent position of SMEs (Gancarczyk & Gancarczyk, 2016). This might lower their profitability, however, the advantage of market channels and knowledge spillovers from LEs outweigh these limitations (Brown & Mawson, 2016; Brown & Mason, 2017; Grillitsch & Nilsson, 2019). Moreover, LEs demonstrate more predictable and persistent growth than small firms, thus stabilising the regional economy and acting as the source of growth of SMEs subcontractors (Brown & Mason, 2017; Coad, 2009). Therefore, we formulate Proposition 3.1.

Proposition 3.1: Large and small firms' regional EEs are associated with higher rates of enterprise growth and profitability relative to other types of EEs.

The positive evaluation of this ecosystem may be weakened if we consider a moderating role of technology. In a lower-technology EE, the infusion of knowledge to small firms is limited and cost pressures are strong, due to more standardised activities outsourced by LEs (Stevenson, Kuratko, & Eutsler, 2019; Robson & Obeng, 2008). This observation leads us to Proposition 3.2.

Proposition 3.2: The growth and performance of enterprises in a large and small firms' EE is weakened if the industrial profile of this EE demonstrates lower technology.

An external investment ecosystem depends on large subsidiaries of transnational corporations (TNCs) with headquarters, major investment decisions, and sources of finance and technology out of the region (Markusen, 1996; Guerrieri & Pietrobelli, 2004; Sturgeon,

2002). Local SME population is weak, featuring limited and short-term business collaboration, financing or knowledge transfer from TNC subsidiaries (Ernst, 2004; Pavlínek, 2012, Rugraf, 2010; Pisoni *et al.*, 2013; Filippov & Duysters, 2011). The latter form strong linkages with corporate headquarters and other subsidiaries out of the region. The collaborative culture is weak and SMEs have minor opportunities for absorbing knowledge and finance through transacting with subsidiaries (Gauselmann, Knell, & Stephan, 2011). Moreover, external financing and technical support are limited for SMEs and they feature hierarchical relations with TNC branches that impose cost cuts and lower margins (Biggiero, 2006). Regional SMEs do not establish joint initiatives to share risk and innovation through business associations or chambers of commerce. Subsidiaries compete on scale economies with limited commitment to innovative activities except for non-technological innovations (Gauselmann, Knell, & Stephan, 2011; De Marchi, Giuliani, & Rabellotti, 2017). The FDI-based regional economy is unstable, due to volatility of TNCs' investment that can easily move to more attractive regions. Moreover, the excessive focus of the regional economy on the TNC's specialisation crowds out innovations and firms in other areas (Pathak, Laplum, & Xavier Oliveira, 2015; Brown & Mason, 2017; Mason & Brown, 2013; Feeny, Iamsiraroj, & McGillivray, 2014). Therefore, the characteristics of external investment ecosystems are in general less favourable for stability and profitability of regional entrepreneurship.

Proposition 4.1: External investment regional EEs are associated with lower rates of enterprise growth and profitability relative to other types of EEs.

The impact of these ecosystems is moderated by the level of technology dominating in the region (Duschl *et al.*, 2014; 2015; Cusmano, Mancusi, & Morrison, 2010; Agostino, 2015; Boix & Trullén, 2007). Knowledge-intensive and high-technology regional specialisations, as well as embedded relationships with the TNC branches can result in upgrading, growth and enhanced performance of local firms (Gorynia *et al.*, 2007; Larimo & Arslan, 2013; Ivarsson & Alvstam, 2011; Lee & Saxenian, 2008; Kodama & Shibata, 2013; Simms & Trott, 2014; Yan, Chiang, & Chien, 2014). Higher technology manufacturing and service sector FDI might foster the growth and performance of local firms (Hart & McGuinness, 2003; Gancarczyk, Gancarczyk, & Bohatkiewicz, 2017).

Moreover, embedding subsidiaries by the regional government can enable local enterprises to reap benefits from FDI (Dziemianowicz, Łukomska, & Ambroziak, 2018). The establishment of collaborations and technology transfer depends also on absorptive capacity, such as human resource qualifications and capabilities of regional enterprises (Bhawe & Zahra, 2019; Fernández-Serrano, Martínez-Román, & Romero, 2018, Gancarczyk & Bohatkiewicz, 2018a).

Proposition 4.2: The growth and performance of enterprises in an external investment regional EE are strengthened if the industrial focus of this EE is high-technology, regional absorptive capacity is high, and regional government is active in embedding subsidiaries.

A government-backed regional EE is built on publicly-owned institutions or firms that establish predominantly short-term and weak collaborations with local entrepreneurs (Markusen, 1996). Therefore, the enterprise population is rather modest and passive in creating joint stabilising instruments within business associations (Sternberg & Wennekers, 2005). This ecosystem suffers from the shortages of external finance and knowledge sources

that impede the growth of firms (Donati & Sarno, 2015). Lower-skilled labour demonstrates a weak capacity to absorb and benefit from public funding in the area of R&D (Tingvall & Videnord, 2018). Economies of scale in the public sector dominate as a method to compete. The government-backed ecosystems are dependent on the investment decisions of central government, which follows political cycles and budget constraints (Humphrey *et al.*, 2018). This prevents the stability of local entrepreneurship and the entire territorial unit.

Proposition 5.1: Government-backed regional EEs are associated with lower rates of enterprise growth and profitability relative to other types of EEs.

The type of innovative output in a government-backed EE depends on the type of major entities, i.e. whether they are "large and small firms" or "SME-dominated," or they are branches of government institutions that are headquartered out of the region ("external investment" ecosystem) (Arauzo-Carod, Segarra-Blasco, & Teruel, 2018). The preferred EE profile would be based on the complementarity of LEs such as large, government-owned institutions or enterprises, and SMEs. Larger entities collaborating with SMEs might be helpful in implementing regional innovation policy and specialisation (Foray, 2014; Gancarczyk & Bohatkiewicz, 2018a)), and in integrating the regional EE with global value chains (Pietrobelli & Rabellotti, 2011; Gereffi & Lee, 2016; Lema, Rabellotti, & Sampath, 2018; European Commission, 2016).

An alternative advantageous profile would be formed by a vibrant SME community, such as the one centred around a technology park (Markusen, 1996; PIetrobelli & Rabellotti, 2011; Arauzo-Carod, Segarra-Blasco, & Teruel, 2018). In this case, central and regional government policies may be conducive to the occurrence of firms' growth and the type of growth (Jankowska, Gotz, & Głowka, 2017; Corrente *et al.*, 2019). The examples are taxation and SME support policies that often raise the preference for business group formation instead of scaling up an individual company (Iacobucci, 2002). As a consequence, the SME-dominated structures emerge.

Proposition 5.2: The growth and performance of enterprises in the government-backed regional EE is strengthened if it assumes the large and small firms' or SME-dominated characteristics.

The Framework

The synthesis of the above literature review is a framework that explores the relationships between the performance of high-growth enterprises and the characteristics of regional entrepreneurial ecosystems.

The logics of this framework is based on the premise that EEs are heterogeneous and we need to capture this variety as alternative profiles rather than as one model only. CEEs can be categorised into types according to a set of structural characteristics, and then quantitatively investigated with the use of taxonomical approaches. These characteristics include the dominant entities in the EE, their ownership, as well as the level and type of relationships and collaboration culture, type of competitive advantage and innovation, human resource qualifications, the sources of external financing and technical advice, as well as the role of regional and central government. Propositions 1, 2, 3, 4, and 5 express the

impact of regional context on the growth and performance of enterprises. Figure 1 presents how particular EE profiles affect the growth and performance of enterprises, indicating possible dynamics due to moderating factors.

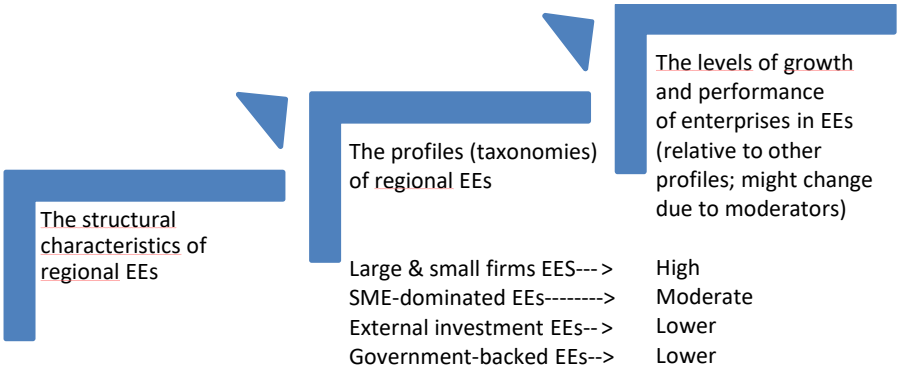

Figure 1. The framework of relationships between the performance of high-growth enterprises and the characteristics of regional entrepreneurial ecosystems
Source: own elaboration.

The prospective empirical research based on this framework would involve three phases as depicted in Figure 1. In the first phase, the structural characteristics of regional EEs need to be described. In the second phase, the profiles or taxonomies of regional EEs are identified. In the third phase, five hypotheses can be tested as to how particular profiles of EEs affect the growth and performance of enterprises. The research can confirm extant hypotheses and thus maintain the proposed typology, or it can reject or modify the profiles derived from the theory. The same refers to growth and performance implications of specific ecosystem types.

DISCUSSION

This study has integrated the research streams of firm growth and entrepreneurial ecosystems and thus it offers the following contributions.

(i) It advances the literature on entrepreneurial ecosystems, by proposing how different profiles of EEs contribute to firms' growth and performance.

The study responds to the heterogeneous nature of regional environments by offering the profiling approach rather than one ideal model of the entrepreneurial ecosystem (Acs *et al.*, 2017; Simsek *et al.*, 2017; Law et al., 1998). By capturing a variety of possible solutions, we avoid the "one-size fits all" approach (Mason & Brown, 2013; Martin & Sunley, 2003; Capozza *et al.*, 2018). In our propositions, we point to a number of variants that are different but some of them are also alternative and equifinal if moderators are considered. As recommended by EE researchers (Brown & Mason, 2017; Acs *et al.*, 2017; Stam, 2017), we drew upon extant models of spatial agglomeration, particularly, industrial district and cluster literature, to ensure knowledge accumulation regarding regional

environment (Markusen, 1996; Sturgeon, 2003; Guerrieri & Pietrobelli, 2004). The input from this study consists in refreshing these models based on later developments in entrepreneurship and regional studies, and in focusing them on the issue of enterprise growth and performance. Although the idea of Markusen's (1996) regional governance types was earlier adopted by Brown & Mason (2017), we have deepened and nuanced their findings. Brown & Mason come up with only two profiles of EEs, which raises doubts whether it can be claimed a taxonomical approach that captures a variety of existing EE types. Their framework is parsimonious in identifying only embryonic (far from ideal) EEs and scale up (ideal) EEs, and thus giving a clear directions for benchmarking and improvements. On the other hand, it leaves a number of other variants unaddressed. The embryonic-scale up opposition ranges from an extremely limited number of high-quality locations that generate unicorns and global high-growers, to low-quality and underdeveloped territories. The framework proposed in this research may be treated as complementary and more nuanced approach to better capture idiosyncrasy as well as substitutability of EE resources and institutions.

Moreover, we address the current criticisms of the EE concept, such as static approach, insufficient recognition of the governance mechanisms and relationships among actors and factors, as well as input instead of output orientation in the evaluation of EEs. The extant models emphasize the components and dimensions of EEs, however, they rarely point to causal relations that would be centred around enterprises and business relationships (Stam & Spigel, 2016; Colombo *et al.*, 2019; Audretsch & Link, 2019; Colombelli & Paolucci, 2019). We propose testing the profiles of EEs – causal relations among actors and factors rather than sets of isolated determinants. The alternative profiles suggest the dynamism and evolutionary considerations, namely, transformation of the extant EE profiles to more developed ones (Guerrieri & Pietrobelli, 2004; Pietrobelli & Rabellotti, 2011; Lee & Saxenian, 2007). Moreover, we clearly emphasize the outcomes of EEs in terms of productive entrepreneurship, by underlining the importance of studying not only size increases (growth), but also the performance of high-growers (Davidsson *et al.*, 2009; Steffen *et al.*, 2009; Nicotra *et al.*, 2019).

(ii) This article advances the studies in the entrepreneurial growth, by proposing how the performance of high-growers is conditioned by the context.

In the studies on firm growth, the issues of performance are underexplored and current results are inconclusive regarding the relationships between expansion as size increase and performance as economic efficiency (Davidsson, Steffen, & Fitzsimmons, 2009; Steffen, Davidsson, & Fitzsimmons, 2009). The article proposes that this inconsistency is resolved by the inclusion of regional environment as a moderator of this relationship (Kangasharju, 2000; Lumpkin & Dess, 1996; Corrente *et al.*, 2019). We also identify how particular regional ecosystems might influence the performance of high-growers.

(iii) Finally, the proposed research framework integrates firm growth and EE studies thus enabling knowledge accumulation (Isenberg, 2010; Stam, 2017).

This integrative study enabled to formulate the advanced research problem that addresses the gaps in both study areas. We responded to this problem by acknowledging the findings and achievements of these areas, with results mutually benefitting them, as stated in points (i) and (ii) above. This enhances the upgraded theory and joint efforts

of research communities that have acted separately to date. It can also lead to more informed and comprehensive results for public policy and business practice.

CONCLUSIONS

This research has accomplished the aim to develop a framework exploring the relationships between the characteristics of entrepreneurial ecosystems and the performance of high-growth enterprises. The propositions address the research problem of how different profiles of EEs affect firms' growth and profitability. Our framework brings the implications for further research, as well as for entrepreneurial practice and policy.

First, the framework raises direct implications for further conceptual and empirical studies. This framework was accomplished with the use of a conceptual approach and based on the review of literature in the area of entrepreneurship and regional development. Due to the emerging and underexplored nature as well as integrative and broad topics, narrative review was determined as the major method (Collins & Fauser, 2005). Narrative review by nature involves subjectivity of literature choices, use of heuristics and stylised approach to a larger extent than systematic literature review does (Green *et al.*, 2006). This weakens the article's argument. Systematic search was added as a complementary method, however, we cannot claim the overall systematic approach.

The arguments in favour of combining narrative and systematic literature reviews are the quality of results and the validity of findings. Complementing the narrative review with the systematic review supports the article's contribution. The propositions and the resulting framework would be less valid, if not backed by broader evidence (Leavitt *et al.*, 2010). Moreover, combining narrative and systematic reviews is recommended to alleviate the weaknesses of each method (Hoon, 2013). The subjectivity of narrative reviews can be alleviated by systematic reviews. On the other hand, systematic reviews, although more objective than narrative ones, might still be inaccurate due to incomplete databases and technical errors. Thus, manual search and narrative reviews help to resolve this bias.
This study forms a ground for further conceptual and theoretical papers that would focus on specific questions and tackle them with systematic literature reviews (Green *et al.*, 2006; Hoon, 2013). Possible themes include policy interventions in ecosystems, evolution and upgrading of EEs, or in-depth exploration of individual dimensions of EEs, such as the collaboration patterns, leading actors, and EEs in global value chains.

Our propositions as to the impact of various EEs on firms' growth and performance were not directly derived from the models used as canvas in this study. They were formulated based on the inference from the findings of regional development and entrepreneurship studies that explored similar actors and factors. This indirect inference limits the validity of the causal relations proposed and calls for verification in empirical research (Hoon, 2013). Upon our framework and propositions, testable hypothesis can be developed to either confirm or verify the proposed causal relations and their moderators.

When formulating propositions, this research focused on identifying the major constructs rather than specific variables and their measurement. The latter should be the task for future research, when propositions need to be converted into testable hypotheses, i.e., the assumptions as to relationships among measurable variables. However, the operationalisation of the research framework and the development of testable hypotheses will be

a challenging task, and it needs to be acknowledged as a limitation of our research results. This is due to the complexity and multiple dimensions of EEs that need to be decomposed for the purpose of operationalisation (Stam, 2015). Moreover, the variety of growth measures and the role of time in measuring growth-profitability interdependencies still remain unresolved in research on firm expansion. When reviewing the literature, we found similar difficulties as already identified in the literature, namely a variety of measures applied in the sample of the reviewed papers (Achtenhagen, Naldi, & Melin, 2010). The sampled studies rarely reported the time lag effect between growth and profitability (Wiklund, 1999; Garnsey *et al.*, 2006; Steffens *et al.*, 2009; Glancey, 1998; Bolek, 2018). Considering a broad array of dimensions and constructs describing the profiles of EEs, it would not be possible to identify any patterns of growth measures relating to the EE profiles or dimensions. This aspect calls for future studies that would acknowledge the importance of expansion measures and the role of time in studying enterprise growth in regional contexts.

The findings of this article demonstrate also implications for entrepreneurial practice and policies. Entrepreneurs can recognize the influence of contextual factors on their prospects for growth and profitability, and thus understand opportunities and threats from the regional environment (Chandler, McKelvie, & Davidsson, 2009; Wach, 2008; Lisowska, 2012; Welter, 2011). Policy-makers are encouraged to consider EEs' implications for regional entrepreneurship and to plan measures tailored to their territorial units in promoting productive entrepreneurship (Stam & Spigel, 2016). Thinking in terms of alternative solutions and equifinality is stimulated this way (Baker & Powell, 2019). Moreover, the implications for policy-makers include the evolution and transformation of their territorial units towards more advanced, scale up EEs (Guerrieri & Pietrobelli, 2004; Pietrobelli & Rabellotti, 2011; Colombo *et al.*, 2019). When looking for stimulants that might drive this evolution, they can consider moderators suggested in the propositions, such as embedding FDIs, input from scientific institutions, building on the industrial base of knowledge-intensive and high-technology industries, and type of public entities established in lagged regions to foster their entrepreneurial performance.

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Author

Marta Gancarczyk
Associate Professor (dr hab.) at the Institute of Economics, Finance and Management, Jagiellonian University in Cracow, Poland; Head of the Department of Globalization and Economic Integration. Her research, publication and consulting activities focus on entrepreneurship, firm growth, technology management and commercialisation, industrial clusters and public policy for small and medium-sized enterprises. She is Associate Editor of the international scientific journal "Journal of Entrepreneurship, Management and Innovation" and Member of the Editorial Advisory Board of the "Journal of Organizational Change Management."
Correspondence to: Dr. Hab. Marta Gancarczyk, prof. UJ, Institute of Economics, Finance and Management, Jagiellonian University in Krakow, ul. prof. S. Lojasiewicza 4, 30-348 Krakow, Poland, e-mail: marta.gancarczyk@uj.edu.pl
ORCID http://orcid.org/0000-0003-2078-9320

Acknowledgements and Financial Disclosure

The research presented in this article is based on the funds from Polish Ministry of Science and Higher Education supporting statutory activities of the Faculty of Management and Social Communication, Jagiellonian University, Krakow, Poland. The draft version of the paper was presented at the conference "Entrepreneurship in Modern Economy" (ENTIME), April 11-12, 2019, Gdansk Technical University. The author would like to thank the anonymous referees indicated by EBER for their useful comments, which allowed to increase the value of this article.

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Ministry of Science and Higher Education
Republic of Poland
The copyediting and proofreading of articles in English is financed in the framework of contract No. 913/P-DUN/2019 by the Ministry of Science and Higher Education of the Republic of Poland committed to activities aimed at science promotion.